

固、液态磷源在石灰性土壤中的移动性及其对土壤有效磷含量影响的研究叶壮¹, 褚贵新¹, 冶军¹, 胡云才², 梁永超¹, 谭崇文¹

1 新疆生产建设兵团绿洲生态农业重点实验室, 石河子大学农学院资源环境系, 新疆石河子832000; 2 德国慕尼黑工业大学植物营养研究所, 慕尼黑, 德国D-85350

A comparison of mobility and availability of granular and fluid phosphate fertilizers in calcareous soils under laboratory conditionsYE Zhuang¹, CHU Gui-xin¹, YE Jun¹, HU Yun-cai², LIANG Yong-chao¹, TAN Chong-wen^{1*}

1 Xinjiang Production and Construction Group Oasis Ecological Agriculture Key laboratory/Department of Resources and Environmental Science, Agronomy College, Shihezi University, Shihezi, Xinjiang 832000, China; 2 Institute of Plant Nutrition, Department of Plant Science, Technical University of Munich, Munich D-85350, Germany

[摘要](#)[参考文献](#)[相关文章](#)Download: [PDF \(716KB\)](#) [HTML 1KB](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

摘要 采用同心圆扩散法对固体和酸性液体磷肥在石灰性土壤中的移动性与有效性进行研究。结果表明, 土壤Olsen-P含量随施肥点圈层由内向外层而递减, 液肥处理的Olsen-P量在施肥点以外的3个土壤圈层中均高于固肥处理。固体肥料大部分停留在距施肥点0.7.5 mm圈层, 占施磷总量的55%70%; 液体肥料虽在0.7.5 mm层的含量低于固体肥料(约占15%40%), 但在远离施肥点的后3个圈层(7.543 mm)中均高于固体肥料处理, 其中7.513.5 mm最为明显(液肥占35%, 固肥占20%)。3种施磷量在砂土、壤土及粘土上均表现出一致的变化规律。肥料对土壤pH值的影响仅限制在距施肥点最近的0.7.5 mm范围, 该层的pH值显著低于后层。本研究说明在石灰性土壤中液体磷的移动性、有效性明显高于固体磷, 但对土壤pH值无显著影响。

关键词: 石灰性土壤 液态和固态磷肥 磷的移动性 磷的有效性

Abstract: Phosphorus fixation in a calcareous soil is a major factor limiting mobility and availability of P fertilizer. This work employed Petridish to investigate the differences between granular and fluid forms of P fertilizers placed in three calcareous soils. The results indicate that Olsen-P is decreased with increasing distance from the central section where the fertilizer is applied. The contents of soil Olsen-P under the fluid fertilization in all sections are higher than those of the granular fertilization except the 0-7.5 mm section. Almost 55%-70% of the fertilizer P remains within 7.5 mm section from the granule fertilizer, but in other three sections, this value is lower than that of the fluid fertilizers, especially in 7.5-13.5 mm section (fluid 35% > granular 20%). The three fertilizer amounts show the same diversification in three soil types. Changes in pH caused by the fertilization are small and limit to the soil section where the fertilizer is applied. Soil pH is significantly low in the 0-13.5 mm section across all soil types ($P < 0.05$). When apply different forms of P fertilizers to the calcareous soils, the fluid fertilization can provide a greater diffusion, availability compared with the granular fertilizers.

Keywords: calcareous soil fluid and granular fertilizer phosphorus diffusion phosphorus availability

Received 2010-01-11;

Fund:

教育部“春晖计划”项目(z2005-2-83003); 新疆兵团农业科技攻关项目(04GG03)资助。

引用本文:

叶壮, 褚贵新, 冶军, 胡云才, 梁永超, 谭崇文. 固、液态磷源在石灰性土壤中的移动性及其对土壤有效磷含量影响的研究[J] 植物营养与肥料学报, 2010, V16(6): 1433-1438

YE Zhuang, CHU Gui-Xin, YE Jun, HU Yun-Cai, LIANG Yong-Chao, TAN Chong-Wen. A comparison of mobility and availability of granular and fluid phosphate fertilizers in calcareous soils under laboratory conditions[J] Acta Metallurgica Sinica, 2010, V16(6): 1433-1438

Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

作者相关文章

- ▶ [叶壮](#)
- ▶ [褚贵新](#)
- ▶ [冶军](#)
- ▶ [胡云才](#)
- ▶ [梁永超](#)
- ▶ [谭崇文](#)